

Design and management of reliable services using face recognition

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IdentityforServices

1990: Senior Security Consultant (BT Laboratories)

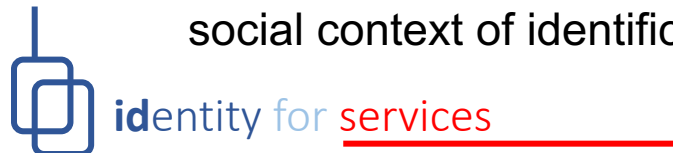
security policy development, biometrics, PKI deployments
research on human security issues
enterprise security including insider threats
societal considerations (accessibility, privacy, legal constraints)
technology futures, etc

2005: Senior Biometrics Adviser (Home Office, UK)

Research lead and principal adviser on application of biometrics
- to immigration, law enforcement, secure documents, prisons
future identification technologies, blockchain
ISO standards
Team lead at CAST

2018: IdentityforServices

service design/management/testing
social context of identification



Theme

- Throughout the conference, spotlight on performance of
 - FR algorithms
 - human reviewers and examiners
 - **system** of FR algorithm and human component
- Procurement is for a capability to deliver a **service(s)**
 - with budget constraints, can the service(s) be justified?
- First thoughts on considerations in assessing performance of services using FR
- Observations on exemplar use cases

Why a focus on services?

- Biometric **technologies** – several generations
- Many trials and deployments of **applications**
- **Services** using biometrics often less successful
 - a technology add-on, not part of a frictionless service?
 - end user is required to adapt to the technology
 - poor communication to end users
 - in many cases, only some aspects of the performance of a service are measured – rarely for a complete end-end service
 - missing elements – secure fall back, PAD and morphing solutions
 - problems are a pain, but could be an opportunity





Black F



Service

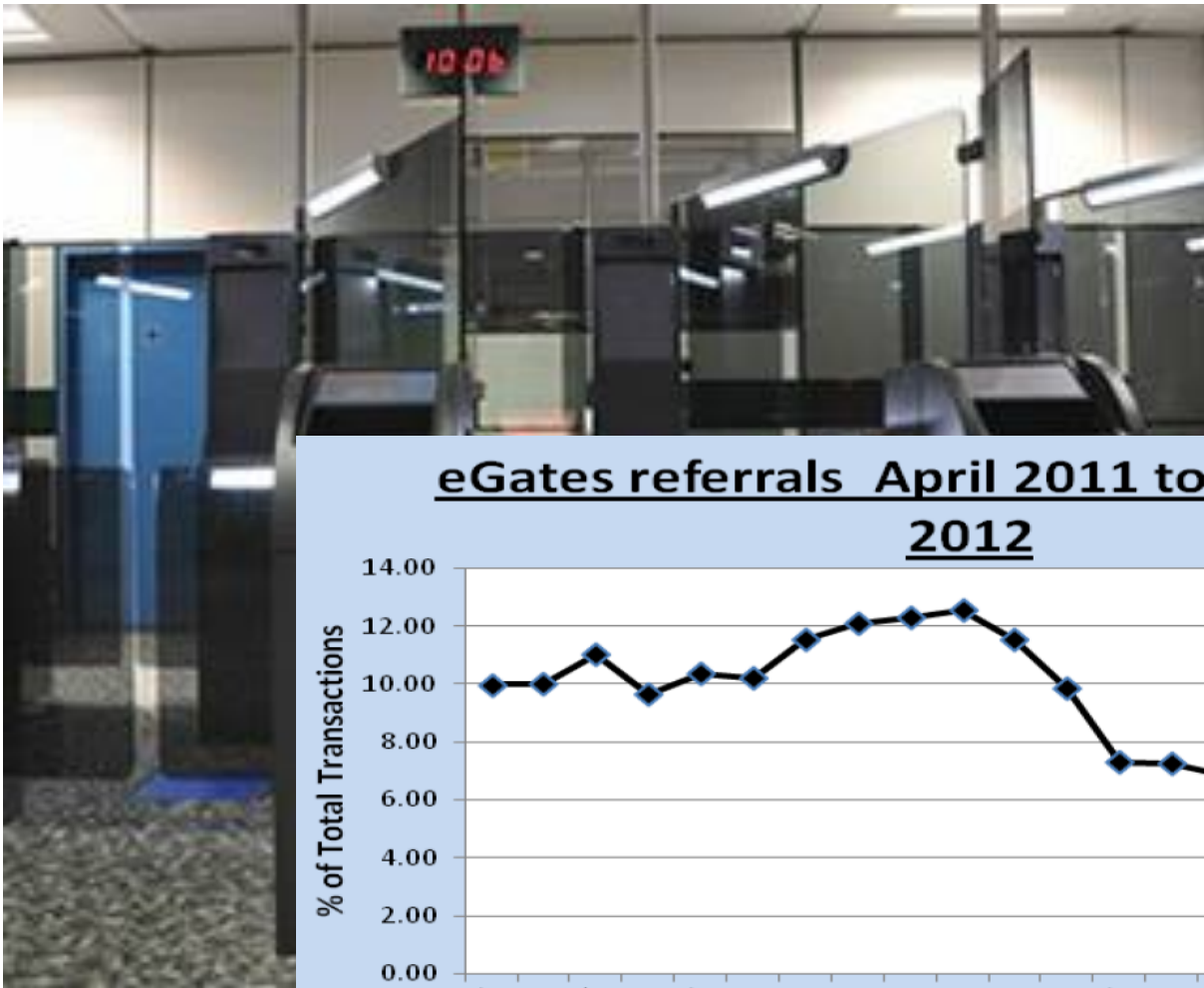
A value exchange between

- the **service provider** performing a certain activity
 - that results in a benefit, and
 - which includes a specific output and/or involves certain experiences,
- and the **service user** who
 - sees value in the output and/or experience and
 - is willing to pay for it, or exchange for something else of value

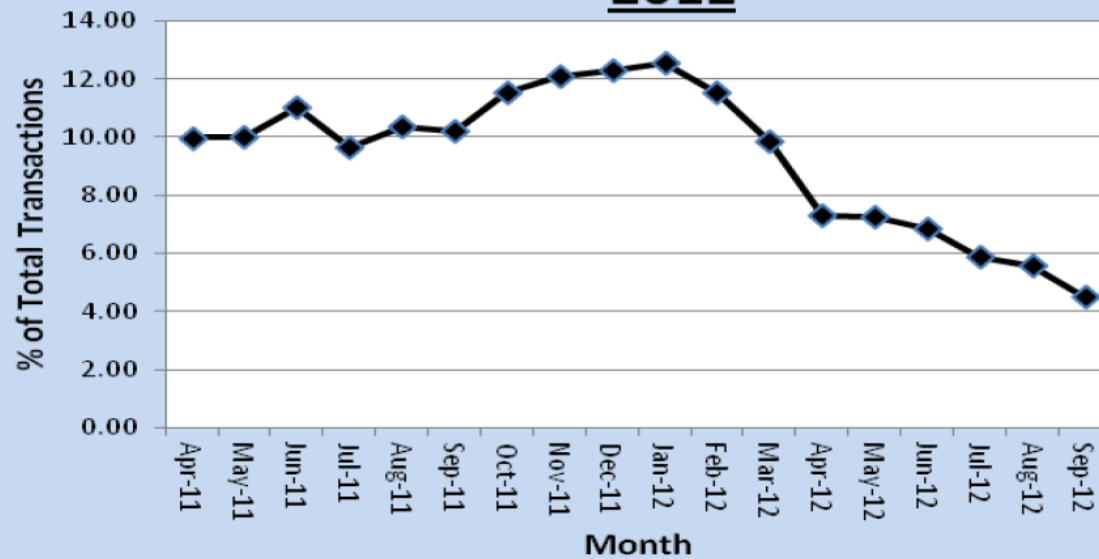
* Adapted from L. Penin *Designing the invisible*' (2018)



Use Case: Verification in ABC gates



eGates referrals April 2011 to September 2012



HARD of
HEARING

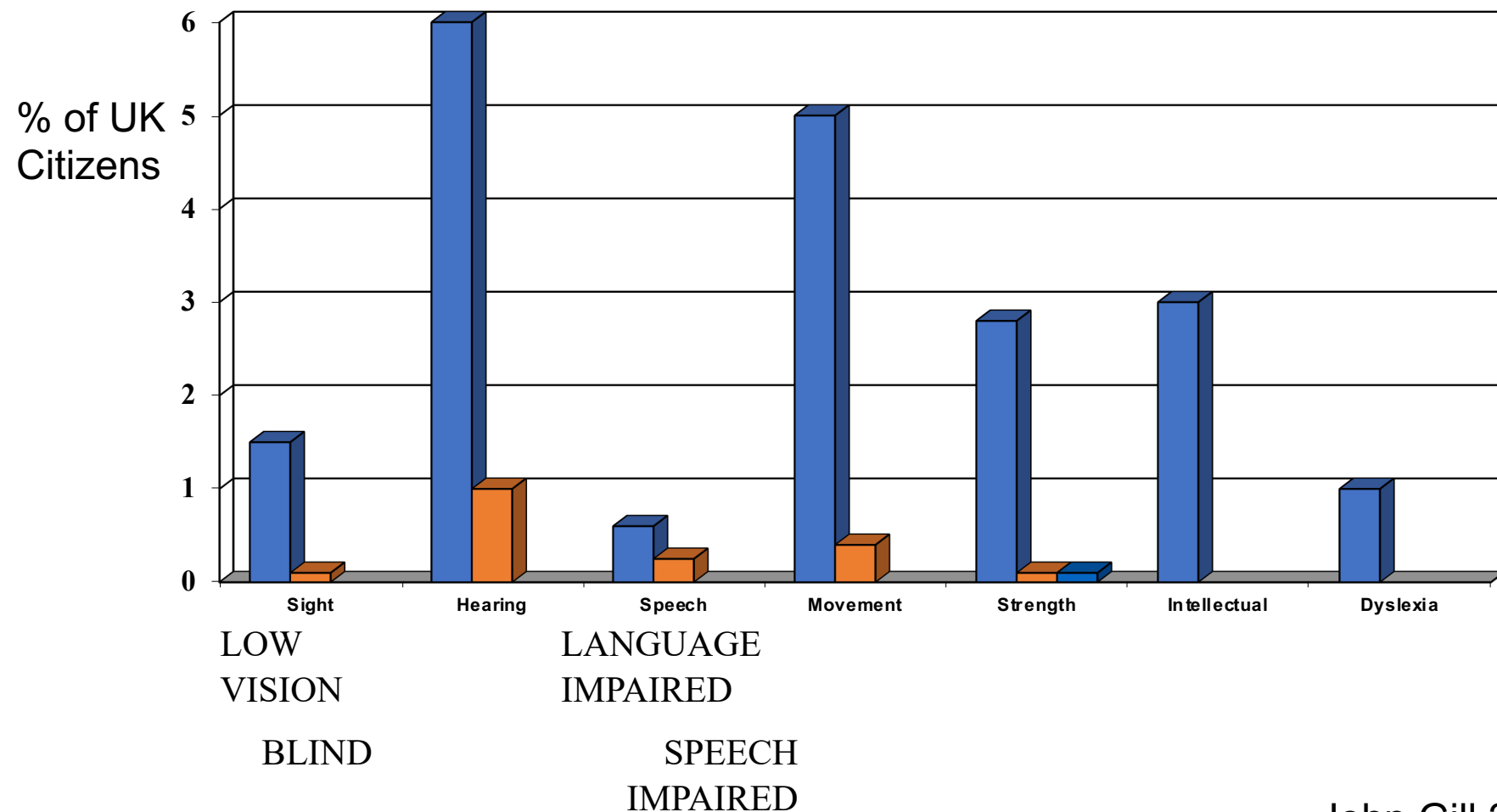
CAN'T WALK
WITHOUT AID

REDUCED
STRENGTH

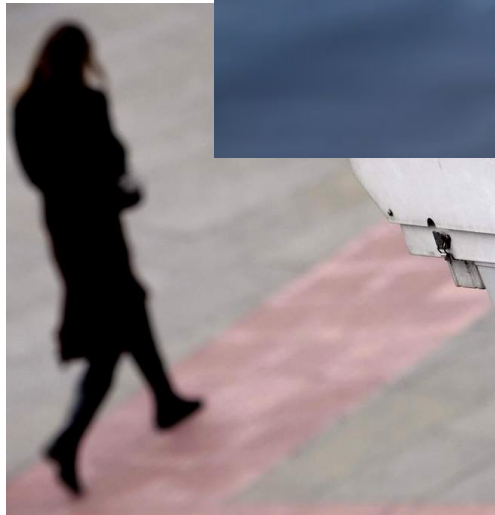
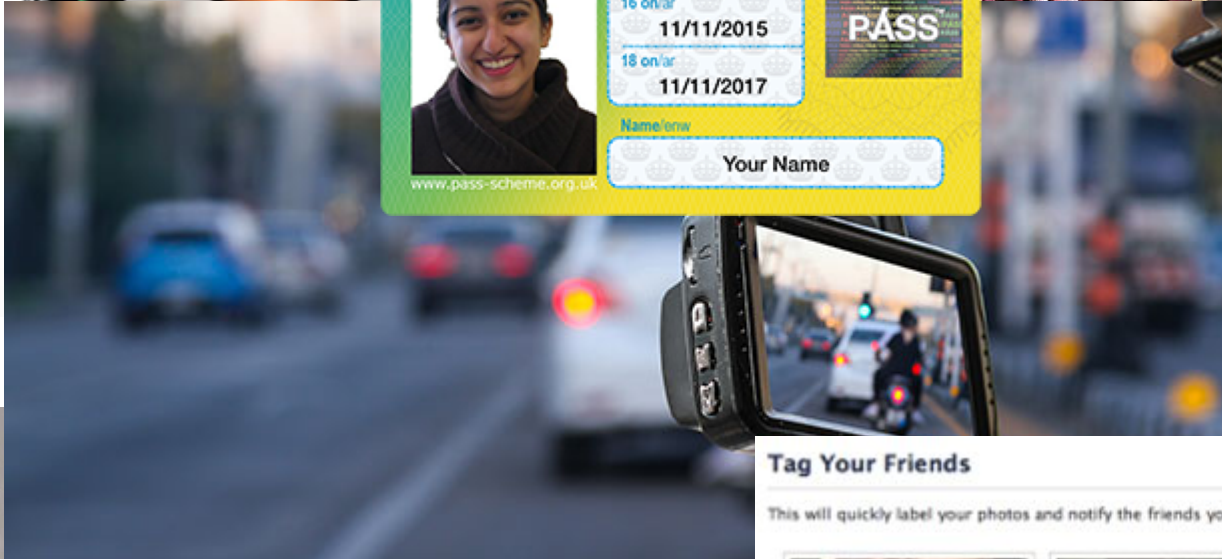
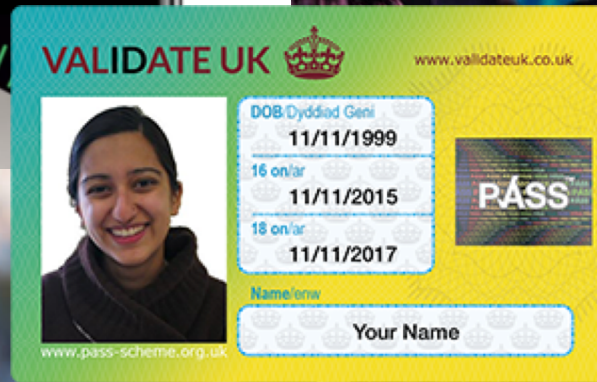
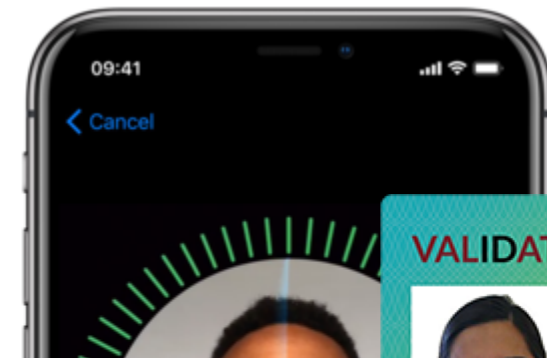
DEAF

WHEELCHAIR
USER

CANNOT USE
1 FINGER/1 ARM

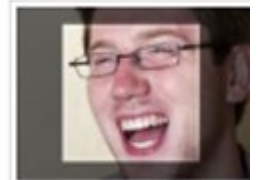



Use Case: Identification using image database




Tag Your Friends

This will quickly label your photos and notify the friends you tag. [Learn more](#)



 Candidates



10 25 All


Show Potential

Show All

☐ Group Candidates

3905

Delete

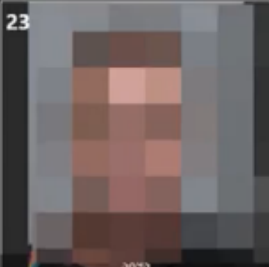
22 

Tony Livsey.bmp
TONYLIVSEY
Unknown
Unknown

Potential

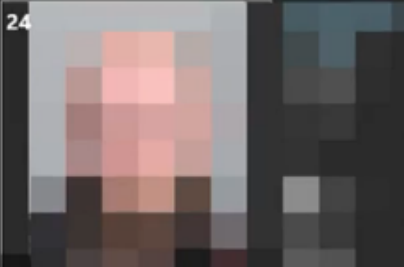
Hit

Delete

23 

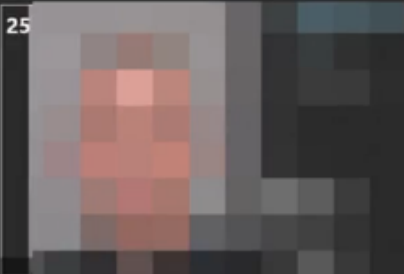
3899

Delete

24 

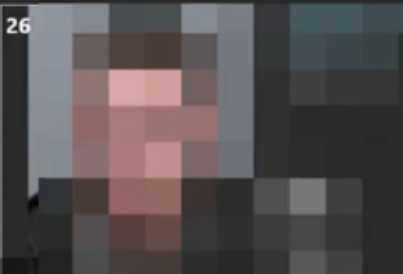
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Delete

25 

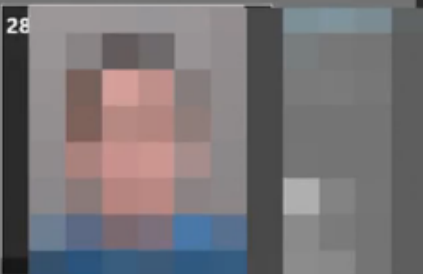
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Delete

26 

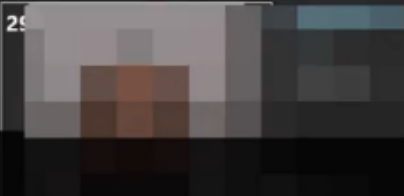
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Delete

28 

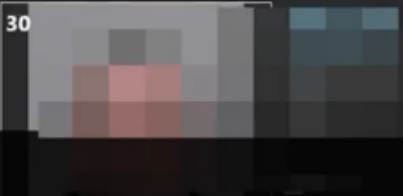
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Delete

29 

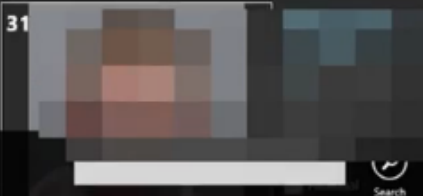
3895

Delete

30 


3895


Delete


31 


3895

Delete

 Verify

 Submit

 Search

 Show Audits

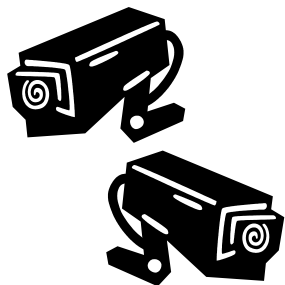


Success factors

1. High quality software working with suppliers
2. Database of high quality images
3. Multiple images in database
4. Small database, local crime
5. Enthusiastic manager and knowledgeable operator



Use Case: Real time CCTV surveillance



**Image
acquisition
cameras,
environment**



**Infrastructure
VMS**



**Automated
face detection
& template
creation**

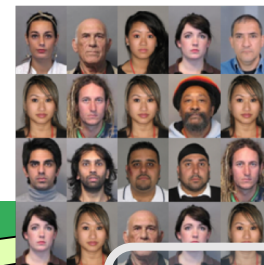
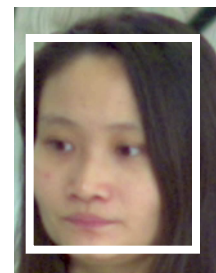
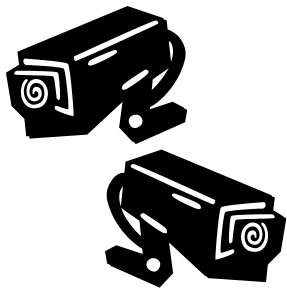


**Watch
list**

**Automated face
comparison**



Action



Watch list

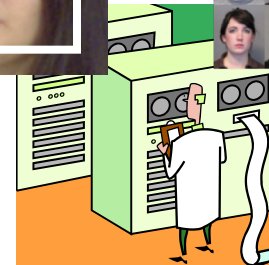


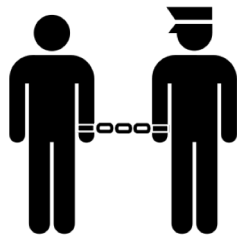
Image acquisition
cameras,
environment

Infrastructure
VMS

Automated
face detection
& template
creation

Automated face
comparison

PROCESS BUS



CONFIRM

REJECT

ALERT

WATCHLIST



Possible
matches
found !



Action

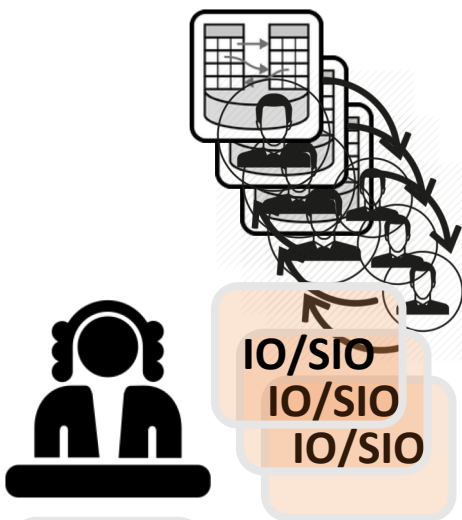
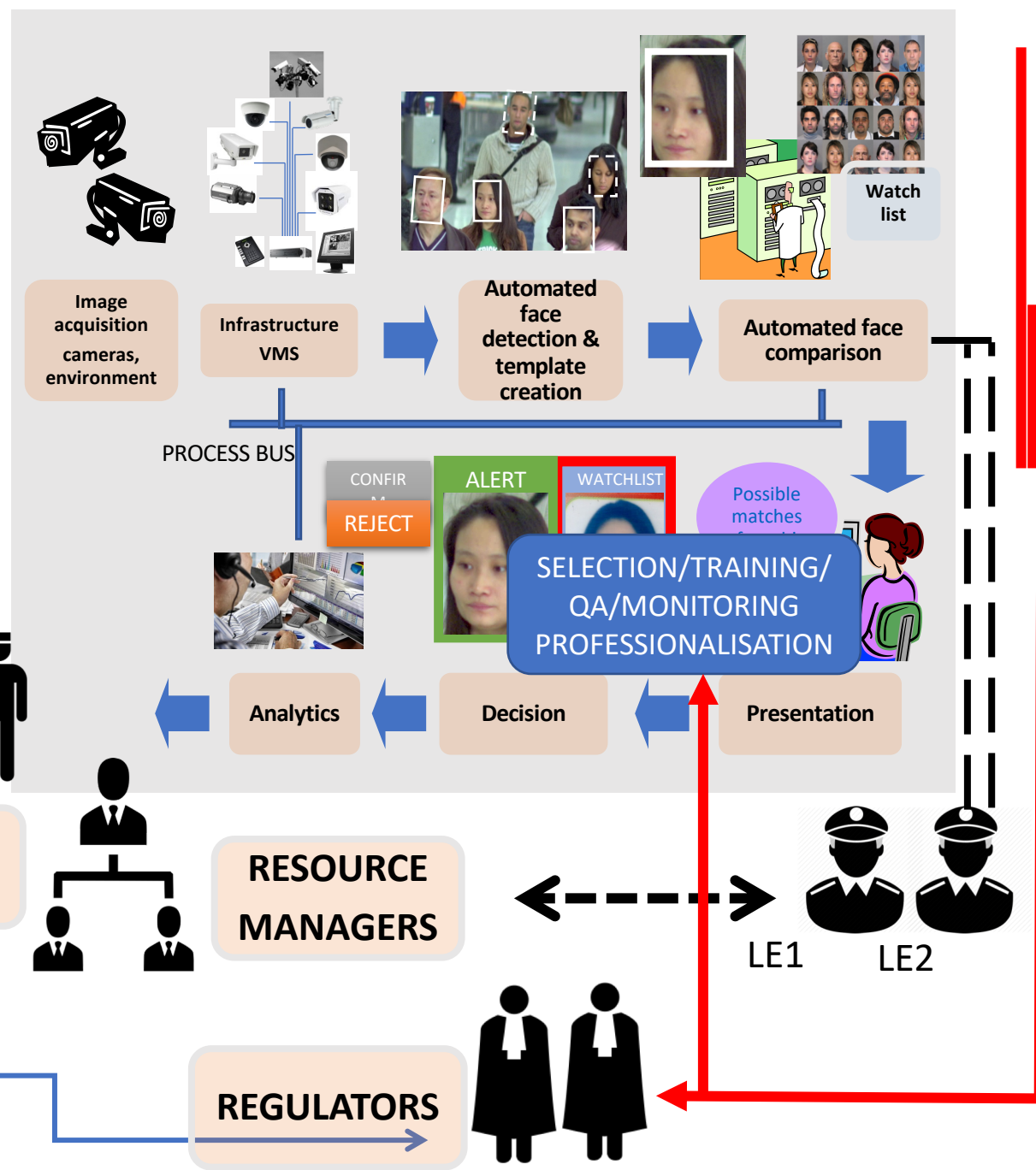
Analytics

Decision

Presentation



**SERVICE DESIGN/
ADAPTATION**



**IO/SIO
IO/SIO
IO/SIO**

Action

CJS

**RESOURCE
MANAGERS**

REGULATORS

LE1

LE2

Evaluation model

- RATER framework (1990)
 - Comparison between customer expectation and delivered experience
- Reliability: consistent, accurate, on time
- Assurance: in comms to the customer
- Tangibles: physical aspects are appealing
- Empathy: relationship of staff to the customer
- Responsiveness: to customer needs & complaints



Conclusions

- A service is more than a system
- Services dependent on FR are diverse
- Commitment to a service is often driven by a leader
- Challenge is to develop/use the metrics that matter to the customer of the service
 - Service supplier and service customer jointly develop metrics?

The story continues

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